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ABSTRACTS PERTAINING TO COMMUNIST CHINA IN SOVIET ABSTRACTS JOURNALS

No. 56

(Mechanics Series)

DDC

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ABSTRACTS PERTAINING TO COMMUNIST CHINA

IN SOVIET ABSTRACTS JOURNALS

No 56

(Mechanics Series)

This serial publication contains translations of abstracts pertaining to Communist China published in Referativnyy Zhurnal, Mekhanika (Soviet Abstracts Journal, Mechanics Series), Nos 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 and 12, 1962.

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RZh Mekhanika 1-62 Abst#1A111 Mechanics/General Mechanics

TOLSTOY, D. M.
KAPLAN, R. L.
LIN Fu-sheng
P'AN Pin-yao

New Experimental Data on External Friction

Issled.v obl.poverkhnostn.sil (Investigations in the Field of Surface Forces) Moscow, Academy of Sciences USSR, 1961, pp 126-138

[No abstract]

1/1

RZh Mekhanika 1-62 Abst#1B744 Mechanics/Movement of Liquid and Gas Mixtures

WU Ch'uan-yao
TAI Chia-yun
CHIANG Chi-kuang
YANG Hsiao-han
TING Hsiang-yu

Determination of the Flow Velocity of Water in Settling Tanks

Sichuan daxue xuebao. Ziran kexue, Acta scient. natur. Univ. szechuan 1958 No 2, pp 33-35

[No abstract]

1/1

HSU Hsiao-chin

Determination of the Wind while Taking into Consideration Nonlinear Terms of Acceleration and Interior Friction Depending on Altitude (Stationary problem)

Vestn. Mosk un-ta Fiz.astron. Herald of the Moscow University.Physics and Astronomy , 1960. No 1, pp 48-57

Given is the distribution of the wind in ratio to height in the surface layer in the presence of eddy friction and acceleration (without local derivative). A two-layer problem is investigated. The model of M. I. Yudik and Shvets is used for changing the friction coefficient by the change of the height. The conditions for the concordance of the velocities and their derivatives are used at z = h, where h is the height of the layer near the earth, a further condition is that of the adherence of the air to the earth's surface and the limitedness of the velocity to infinity. The problem leads to an integral-differential equation which is solved by successive ap-

1/2

proximations. As first approximation serves the solution of the equation of the even movement for turbulent atmosphere without taking into account the acceleration. Then, the distribution of the wind in height takes place in the second approximation by taking into account the convective part of the acceleration. Tables and graphs are shown in relation to the change of the wind in ratio to height for different values of the parameters. Nine references.

K. Reshetnikova

2/2

RZh Mekhanika 1-62

Abst#1B867 Mechanics/ Movement of Liquids and Gases in Porous Media/ Unestablished Movements.

LANG Chai-hsin

Approximation Method of the Solution of One-Dimensional Nonstationary Gas Filtration

Tr. Mosk in-t neftekhim. i gaz. prom-sti (Proceedings of the Moscow Institute of the Naphtachemistry and Gasindustry) Issue 33, pp 282-289

The integral relation method is used for the radial problem of nonstationary gas leakage in case of continuous output of gas, while the relation of the pressure p to the distance r from the well is thus expressed:

$$p^2(r,t) = p_1(t)\ln\frac{r}{l(t)} + p_2(t) + p_3(t)\frac{r}{l(t)}$$

where $p_1(t)$, $p_2(t)$, $p_3(t)$ are coefficients to be determined while $l(t)$ is the radius of the conditional influence limit. The results obtained by above-suggested method tally with the figures obtained by computers. By analogy one can solve the radial problem by cosinoidal law for the change of width. As shown by further numerical

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Abst#1B867 (cont'd)

analysis pressure drop on the periphery reveals itself in the given case as coming near to the pressure drop on the periphery of an equidimensional stratum of constant thickness.

V. Shestakov

2/2

RZh Mekhanika 1-62 Abst#1B871 Mechanics/ Movement of Liquids and Gases in Porous Media/ Unestablished Movements.

LANG Chai-hsin

Approximation Method of the Solution of the Problem of Nonstationary Gas Filtration in a Circular Stratum

Tr.Mosk.in-t neftekhim.i gaz.prom-sti (Proceedings of the Moscow Institute of the Naphtachemistry and Gasindustry) Issue 33, pp 252-262

In order to solve the one-dimensional unsettled gas leakage in case of isotropic flow, the nonlinear differential equation (of the Bussinesk equation type for ground stream) is solved by the integral relation method introduced in the theory on leakage by G. I. Barenblatt. In order to determine the elements of the leaking stream in a semi-limited and closed rectilinear layer the pressure square is represented in ratio to the distance as a polynomial of second degree. Whereupon use is made of only one balanced integral relation. The solution for the semilimited layer thus obtained is compared with the strict solution of P. Ya. Polubarinova-Kochina whereby the results tallied in a satisfactory way. Five references.

1/1

RZh Mekhanika 1-62 Abst#1B882 Mechanics/ Movement of Liquids and Gases in Porous Media /Unestablished Movements

LI Yung-shang

Method to Establish the Piezoconductivity of Layers at the Point of Maximum Pressure Change of the Layer in the Reacting Well

Tr.Mosk.in-t neftekhim.i gaz.prom-sti (Proceedings of the Moscow Institute of Naphtachemistry and Gasindustry) 1961, issue 33, pp 249-251

The curve of the pressure changes in the reacting well is measured at a temporal change of the yield in the perturbed well. The piezoconductivity $\varkappa$ is determined through the following formula

$$\varkappa = \frac{r^2 t_1}{4t_2(t_1+t_2)\ln\frac{t_1+t_2}{t_2}}$$

the starting moment is t_2 in which the pressure change reaches its maximum (or minimum), with definite distances r of the well's and

1/2

Abst#18882 (cont'd)

known spaces of time of the perturbations t_1.

G. Taybul'skiy

2/2

RZh Mekhanika 1-62

Abst#1C111 Mechanics/Elasticity and Plasticity/ Theory of Elasticity

CHENG K'e-yang

Plane Viorations of Foundations

Izv. vyssh. uchebn. zavedeniy. Str-vo i arkhitekt. (News of Higher Educational Institutions. Construction and Architecture) 1959, No 9, pp 71-78

Here are investigated the free and positive plane vibrations of a solid body becoming quiescent on account of the elasticity of the base. The elastic basis (elastic according to Winkler) has different yielding under pressure in different directions perpendicular to each other and under bending. In order to solve the problem a system of three canonical equations is set up, whose coefficients are established through formulae obtained previously (cf. Kiselev V. A. Beams and Frames) by the elasticity of the base. The general solution is specified for the location of the centre of mass in several particular cases and for the point of application of the force. The frequencies of the free vibration and the amplitudes of the positive vibrations

1/2

Abst#10111 (cont'd)

are determined for a double-stage compressor mounted on base.

E. Beylin

2/2

RZh Mekhanika 1-62 Abst#10116 Mechanics/Elasticity and Plasticity/ Theory of Elasticity

HSIEH Tsu-wei

Natural Vibrations of the Double-Hinged Parabolical Arch at the Joint Strain of the Superposed Construction

Stroit.mekhan.i raschet sooruzh. (Structural Mechanics and Computation of the Construction) 1960, No 3, pp 34-39

The method suggested by A. T. Smirnov (Stability and Vibrations of Constructions, Moscow, Transzhelgorizdat 1958 - RZhMekh 1959, No 11, 11107) is employed, based on the theory of matrices. The supports are supposed to be hinged to the beam and arch, the curve of the axes of the arch is substituted by a broken one, while the masses are applied on the ends of the square sections. The superfluous hyperstatic unknown, undetermined values are substituted by stresses in the supports. One studies the first skew symmetric form of the system's vibrations. The relations are composed in the matrix system making it possibile to find the natural frequency of the vibrations and the critical thrusts; being aware of whom one knows how to appraise the influence on the

1/2

frequency of the normal forces in the arch. A numeric example is shown for a parabolical arch. The result concerning a large groups of arches is presented under different rigidity conditions of the beam and arch and in respect to different heights of the arch.

I. Snitko

Abst#2A125 Mechanics/ General Mechanics/ Control Theory

MOR-RAMENSKIY, A. E.
HUNG Chien

Optimum Tracking Device with Two Controlling Parameters

Avtomatika i telemekhanika (Automation and Telemechanics) 1961, 22, No 2, pp 157-170

The task is investigated how to design a tracking device with preset limits of change and two controlling parameters being an optimum construction for rapid action.

The parameters of the electrical device are chosen on the basis of L. S. Pontriyagin's maximum. The author expounds the means how to realize the law on the change of the controlling parameters, presents the description of the construction layout and the devices carrying into effect that layout.

The obtained results are shown by graphs and pictures; further

1/2

the operation of the tracking device is presented in comparison with other possible controls.

N. Apykhtin

2/2

RZh Mekhanika 2-62 Abst#2A170 Mechanics/General Mechanics/ Theory of Mechanisms and Machines

SHU Sung-k'uei

Problems on the Stability and Nonlinear Oscillations in Systems of Multistage Selsyns

Shu-hsueh hsueh-pao, Acta math. sinica 1961, 11, No 2, pp 170-180.

[No abstract]

1/1

RZh Mekhanika 2-62 Abst#2A200K Mechanics/General Mechanics / Theory of Mechanisms and Machines

HUANG Wei-te

The Vibration of Engines

Shanghai, Shanghai k'o-hsueh chi-shu ch'u-pan-she 1960, 180 thousand characters.

[No abstract]

1/1

RZh Mekhanika 2-62 | Abst#2B99 | Mechanics/ Hydromechanics/ Acoustics

FENG Shao-sung

Reflection of a Wave with Finite Amplitude

Akust.Zh. (Journal of Acoustics) 1960, 6, No 4, pp 491-493

The problem of the reflection of a wave incident on a wall at an angle of 45° is solved in case of an ideal gas by the method of subsequent accurate approximations including the second approximation. It is proved that in case of a reflection at such angle a double frequency wave comes into being, whose amplitude increases by the distance, while the reflection itself takes place according to the laws valid for infinite small amplitudes. Besides that, a double frequency wave comes into being, cylindrically symmetric with the amplitude, not changing with distance.

V. Krasil'nikov

1/1

RZh Mekhanika 2-62 | Abst#2B332 | Mechanics/Hydromechanics/Hydrodynamics and Hydraulics

SHEN Tsun-p'ing

A Contribution to the Determination of the Elements of the Internal Waves in the Sea from Single Hydrological Observations

Izv. AN SSSR, seriya Geofizika (News of the Academy of Sciences USSR, Geophysical Series), 1961, No 7, pp 1088-1091

[No abstract]

1/1

Abst#2B475 Mechanics/ Hydromechanics/ General
Theory of Movement of Viscous Liquids

SHI Tsung-pao
WANG Kuang-yin

Contribution to the Theory of the Movement of Viscous Liquids

Shu-hsueh hsueh-pao, Acta math. sinica 1961, 11, No 1, pp. 1-10.

[No abstract]

1/1

CHANG Yung-shu
LI K'un-yuan
WANG Mu-ch'iu

Stability of Movement in a Finite Time Range

[illegible] Kexue-pao Acta math sinica 1961, 11 No 2, pp 141-150

The stability of the following system is investigated in a finite system

$$\frac{dx_i}{dt} = p_{i1}(t)x_1 + \ldots + p_{in}(t)x_n \quad (i = 1, \ldots, n)$$

and

$$\frac{dx}{dt} = p_{i1}(t)x_1 + \ldots + p_{in}(t)x_n + X_i + R_i$$

where

$$R_i(t; x_1, \ldots, x_n) = \delta p_{i1}(t)x_1 + \ldots + \delta p_{in}(t)x_n + \delta x_i$$

The authors have obtained several interesting conditions of stability by making use of the Lyapunov function of following form:

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$$V = \varphi^2(t)\sum_{i,k=1}^{n}\beta_{ik}x_i x_k =$$

$$= \varphi^2(t)\left[\Delta_2 \ldots \Delta_n \sum_{j=1}^{n} x_j^2 + \sum_{\sigma=1}^{n-1}\sum_{j=1}^{n}\prod_{\substack{s=1\\ s\neq\sigma,\sigma+1}}^{n}\Delta_s \times \right.$$

$$\left. \times \Delta_{\sigma j}^2(t; x_1, \ldots, x_n)\right]$$

where $\varphi(t) \geq \delta > 0$; $\Delta_1, \ldots, \Delta_n$ is the essence of the Hurwitz determinant of the characterizing equation

$$|p_{ij}(t) - \lambda\delta_{ij}| = (-1)^n(\lambda^n + p_1\lambda^{n-1} + \ldots + p_n) = 0$$

$\Delta_{\sigma j}(t; x_1, \ldots, x_n)$ are the determinants obtained from Δ_σ through substitution of all the elements of the p_{k-1} s-th line by the values

$\sum M^{(j)}_{\nu_1 \ldots \nu_k}$ where $M^{(j)}_{\nu_1 \ldots \nu_k}$ is a determinant of the k-th order whose elements are in essence the elements of the $\nu_1 \ldots \nu_k$ columns and $\nu_1 \ldots \nu_k$ is a line of the $(\nu_1 < \ldots < \nu_k)$ determinant obtained from $\|p_{ij}(t)\|$ through substitution of the j-th column by

2/3

Abst#3A114 (cont'd)

$\begin{pmatrix} \nu_1 \\ \vdots \\ \nu_k \end{pmatrix}$; the symbol $\sum M^{(j)}_{\nu_1, \ldots, \nu_k}$ denotes the total of all $M^{(j)}_{\nu_1, \ldots, \nu_k}$

in relation to $\nu_1, \ldots, \nu_k$, where $\nu_1, \ldots, \nu_k$ is in essence every kind of combinations of the numbers 1, ..., n, where the number j is included in $(\nu_1, \ldots, \nu_k)$ without fail.

Chang Te-ch'ang

3/3

RZh Mekhanika 3-62

Abst#3B136 Mechanics/ Hydromechanics/ Dynamics of Gases and Aerodynamics

LIN Chien-ping

Some Frankl Tasks

Vestn.Leningr.un-ta (News of the Leningrad University) 1961, No 13, pp 28-39 (English summary)

A theorem on the uniqueness of a quasiregular solution of the following task of F. U. Frankl is demonstrated

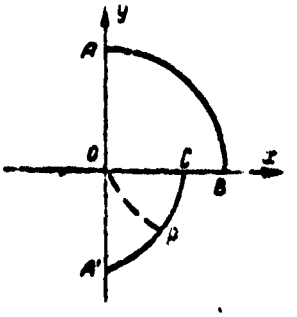
$$\begin{gathered} K(y)u_{xx} + u_{yy} = 0,\ K(y)y \geq 0,\ K'(y) > 0 \\ u|_{BA} = \varphi_1(x),\ u|_{CB} = \varphi_2(x),\ u_x|_{AA'} = 0 \\ u(0, y) - u(0, -y) = f(y),\ -1 < y < 1 \end{gathered} \tag{1}$$

where BA is a Jordan curve, A'C, CP are the characteristics (see Figure) in the assumption

$$\begin{gathered} K(y) + K(-y) \geq 0,\ 0 < y < 1 \\ (x - m)\frac{dy}{ds} + y\frac{dx}{ds} < 0 \text{ на } BA,\ m > \max_{BA}(x). \end{gathered} \tag{2}$$

1/3

Condition (2) is satisfied in case of the gasodynamic equation of Chaplygin. Two new mutually conjugated tasks deriving from the task of Frankl are also stated



Task 1. Work out the solution of equation (1) satisfying the limit conditions

$$u|_{BAA'} = \psi_1(s),\ u_y|_{CB} = \psi_2(x)$$
$$u_x(0, y) - u_x(0, -y) = f(y),\ -1 < y < 1$$

Task 2. Work out the solution of equation (1) satisfying the limit

2/3

conditions

$$u_x|_{BA} = \psi_1(s),\ u|_{A'C} = \psi_2(s),\ u_y|_{CB} = \psi_3(x)$$
$$K(y)\,u_x(0, y) + K(-y)\,u_x(0, -y) = f(y),\ -1 < y < 1$$

Theorems are demonstrated on the uniqueness of the regular solutions and existence of generalised solutions with a method analogous to that used in the work of Morawetz (Morawetz C. S. Communs Pure and Appl Math 1958, 11, No 3, pp 315-331).

P. Barantsev

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RZh Mekhanika 3-62 | Abst#3B455 | Mechanics/Hydromechanics / Hydrodynamics and Hydraulics

LIU Ta-ming

Distribution of Velocities and Pressures in the Spillways of Combined Hydroelectrical Power Plants

Gidrotekhn.stro-vo (Hydrotechnic Construction) 1961, No 8, pp 45-48

An equation is deduced to determine the value of pressure in any waterflow within the extent of the curvilinear sections of combined GES [Gidroelektricheskaya stantsiya; Hydroelectric Power Plant] according to definite geometrical parameters and definite values of the full specific energy of the flow before the overflow weir. Based on the conclusion of the equation a conjecture is proposed corroborated by experimental data, i. e., the distribution of the velocities in the curvilinear sections of the overflow weir is subject to the law of spaces. The experimental figures characterising the distribution of pressures along the length of the overflow weirs is presented and suggestions are offered for their general design.

1/1

V. Gromov

RZh Mekhanika 3-62 | Abst#3B514 | Mechanics/ Hydromechanics/ Hydrodynamics and Hydraulics

CH'EN Chen-ch'eng

The Hydrodynamic Pressure on the Dam Caused by its Aperiodic or Impulsive Oscillations and the Vertical Oscillations of the Soil Surface

Prikl.matem.i mekhan. (Applied Mathematics and Mechanics) 1961, 25, pp 716-728

The task of determining the dynamic pressure of the fluid on the dam is investigated. The pressure is caused by the aperiodic and impulsive oscillations of the dam itself and by the vertical oscillations of the soil surface above the fluid.

Accordingly, the dam and the soil surface are located in the planes $x = U_1(t)$ and $y = U_2(t)-h$, while the area $x \geqslant U_1(t)$, $U_2(t)-h < y < U_2(t)$, $-\infty \leqslant z \leqslant +\infty$ is filled with the fluid.

The potential $\varphi(x, y, t)$ of the velocities of the fluid satisfies in the area $x \geqslant U_1(t)$, $U_2(t)-h \leqslant y \leqslant U_2(t)$ a Laplace equation,

1/3

Abst#3B514 (cont'd)

the initial conditions

$$\frac{\partial\varphi(x, 0, 0)}{\partial t} = 0, \quad \frac{\partial\varphi(0, y, 0)}{\partial x} = V_1(0)$$

$$\frac{\partial\varphi(x, -h, 0)}{\partial y} = V_2(0)$$

and the conditions on the limit of the area

$$\frac{\partial\varphi}{\partial x} = V_1(t) \text{ if } x = U_1(t)$$

$$\frac{\partial\varphi}{\partial y} = V_2(t) \text{ if } y = U_2(t) - h$$

$$\frac{\partial^2\varphi}{\partial t^2} + g\frac{\partial\varphi}{\partial y} = 0 \text{ if } y = U_2(t)$$

Here $V_1(t)$ and $V_2(t)$ are the corresponding velocities of the oscillating dam and soil surface, while $U_1(t)$ and $U_2(t)$ are their displacements. The free surface of the fluid is assumed to be known previously and conjectured to be deformed exactly like the soil surface.

The searched solution is a Fourier integral. The arbitrary functions entering in the solution are determined by the initial and limit conditions. Formulae are deduced bearing on the distribution of the

2/3

Abst#3B514 (cont'd)

dynamic pressure of the fluid on the dam. It follows from the results obtained that the vertical oscillations of the soil surface have a considerable influence on the load of the dam in case of destructive as well as violent earthquake.

Z. Dobrovolskaya

3/3

TS'AI K'uo-en

Heat Exchange in a Turbulent Flow of Fluid with High Values of the Prandtl Numbers

Inzh. fiz. zh. (Engineering Physical Journal) 1961, 4, No 8, pp 20-29

The theoretical investigation of the heat exchange in a turbulent flow of fluid with high Prandtl numbers is based on the perfection of the semiempirical theory of turbulence created by L. G. Loytsyanskiy (Prikl matem i mekh; Applied Mathematics and Mechanics 1960, 24, No 4, pp637-646). Meanwhile in order to obtain a relatively simple and obvious solution the author -- unlike L. G. Loytsanskiy -- developes the stream in two domains. The first domain comprises the so-called "laminar" and "intermediate domain." But, unlike Karman and Prandtl, author takes into account all-over this domain the interaction of a molecular and turbulent transfer needed for the relatively high Prandtl numbers. Author succeeds to obtain for this domain an uninterrupted

1/2

---

solution of closed form. The second domain contains the turbulent core, in which one can disregard the molecular transfer. In this domain the usual logarithmic velocity distribution and corresponding logarithmic temperature distribution may be used.

Author uses for obtaining the expression of temperature distribution the concept of "The Prandtl Turbulence Number" $\sigma = \varepsilon_q/\varepsilon_\tau$ which one may assume for the first domain as equal to 0.8 according to the experimental data of Deissler (Deissler R. NASA Rept. 1955, No 1210, 14 pp - RZhMekh 1960, No 8, 10401).

Author has obtained relatively cumbersome expressions in universal coordinates for the velocity and temperature profiles. The curve of the velocity profile tallies well with the experimental figures. Besides that author has obtained an expression for Stanton's number, also cumbersome enough. It becomes somehow more simple for higher Prandtl numbers. The formulae obtained tally well with Deissler's experiments.

2/2 E. Kalinin

CHU Yun-t'i

Computation of the Dynamic Influence of Mountain Ranges in the Nonlinear Task of Long-term Forecast of Meteorologic Elements

Izv. AN SSSR ser. geofiz. (News of the Academy of Sciences USSR Geophysical Series) 1959, No 12, pp 1807-1820

Generalization of E. N. Blinova's work (Reports of the AN USSR 1956, 110, No 6) on the influence of mountain ranges on nonstationary atmospheric processes on planetary scale. Following are the equations taken as starting points:

$$\frac{\partial \Omega}{\partial t} + \frac{v}{a}\frac{\partial}{\partial \theta}(\Omega + 2\omega\cos\theta) + \frac{u}{a\sin\theta}\frac{\partial \Omega}{\partial \lambda} = -\frac{R}{a^2\sin\theta}\left(\frac{p'}{\tilde{p}}, T'\right) + \frac{2\omega\cos\theta + \Omega}{\tilde{\rho}}\frac{\partial \tilde{p}}{\partial z}w \qquad (1)$$

$$\frac{\partial T'}{\partial t} + \frac{v}{a}\frac{\partial T'}{\partial \theta} + \frac{u}{a\sin\theta}\frac{\partial T'}{\partial \lambda} + (\gamma_a - \gamma)w = 0 \qquad (2)$$

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Abst#3B704 (cont'd) Here $\Omega = \frac{1}{a\sin\theta}\left[\frac{\partial}{\partial\theta}(u\sin\theta) - \frac{\partial v}{\partial\lambda}\right]$

is the vertical component of the vortex of velocity, a is the medium radius of the earth, θ is the latitudinal complement, λ is the longitude, u, v, w are the components of the vector of wind velocity along the axes λ, θ and z respectively, $\omega = 7.29 \times 10^{-5}$ sec^{-1} is the angular velocity of the rotation of the earth, R is the gas constant, p' and T' are the pressure and temperature deviations from their standard values $\tilde{p}(z)$ and $\tilde{T}(z)$, $\tilde{\rho}(z)$ is the standard density, γ is the actual vertical temperature gradient, γ_a is the adiabatic temperature gradient. Assuming that the atmosphere is solenoidal and the movement quasigeostrophic, author obtains the following equation for the function of the flow:

$$\Delta\frac{\partial \psi}{\partial t} = \frac{1}{\Gamma}\frac{\partial}{\partial \xi}\left(\xi^2\frac{\partial^2\psi}{\partial\xi\,\partial t}\right) - \frac{1}{a^2\sin\theta}(\psi, \Delta\psi + 2a^2\omega\cos\theta) - \frac{1}{\Gamma a^2\sin\theta}\left\{\left[\frac{R(\gamma_a - \gamma)}{g} + 1\right]\left(\psi, \frac{\partial\psi}{\partial\xi}\right) + \left(\psi, \xi\frac{\partial}{\partial\xi}\xi\frac{\partial\psi}{\partial\xi}\right)\right\} \qquad (3)$$

Here $\xi = p(z)/P$, P is the standard pressure at sea level, Δ is the Laplace operator

$$(A, B) = \frac{\partial A}{\partial\theta}\frac{\partial B}{\partial\lambda} - \frac{\partial A}{\partial\lambda}\frac{\partial B}{\partial\theta}, \quad \Gamma = \frac{R^2T_1}{4a^2\omega^2 g}\frac{\gamma_a - \gamma}{\cos^2\theta}$$

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Abst#3B704 (cont'd)

g is the velocity due to the force of gravity. The task is solved for following limit conditions: 1) $\xi \frac{\partial^2 \psi}{\partial \xi \partial t}$ is limited when $\xi = 0$; 2) $w = \frac{\partial h}{\partial t} + \frac{u}{a \sin \theta} \frac{\partial h}{\partial \lambda}$ on the surface of the mountain, where $h = h(\psi, \lambda)$ is the equation of the surface of the mountain. Finally the solution for $\partial \psi / \partial t$ is thus written

$$\frac{\partial \psi}{\partial t} = \frac{1}{2\pi} \left\{ \int_0^{2\pi} \int_0^{\pi/2} G_{\xi'=1} \left[\frac{2a^2 \omega g \cos \theta'}{R T_1 \xi_h} (\psi, h)_{\xi=\xi_h} - \right.\right.$$

$$\left.\left. - \frac{1}{\Gamma} \left(\psi, \frac{\partial \psi}{\partial \xi} \right)_{\xi=\xi_h} \right] d\theta' \, d\lambda' - \int_0^1 \int_0^{2\pi} \int_0^{\pi/2} G(\psi, L) \, d\theta' \, d\lambda' \, d\xi' \right\}$$

where

$$G_{\xi'=1} = G(\theta', \lambda', 1, \theta, \lambda, \xi), \quad L = -\frac{1}{\Gamma} \frac{\partial}{\partial \xi} \left(\xi^2 \frac{\partial \psi}{\partial \xi} \right) -$$

$$- \Delta \psi - 2a^2 \omega \cos \theta$$

$$G = \frac{\Gamma}{2\sqrt{\xi \xi'}} \sum_{n=1}^{\infty} \frac{2n+1}{2N} \left(\frac{2N+1}{2N-1} e^{-N \ln \frac{1}{\xi \xi'}} + \right.$$

$$\left. + e^{-N |\ln \xi/\xi'|} \right) \times [P_n(\cos \gamma) - P_n(\cos \bar{\gamma})]$$

3/4

Abst#3B704 (cont'd)

An original method is suggested for the approximation summing up the series representing the functions of the influence. The computed functions of the influence are shown by graphs.

Sh. Mysaelyan

4/4

DYUBYUK A. F.
HSU Hsiuao-chin

Determination of the Wind over the Mountains in a Pressure Field with Varying Friction Coefficient in a Limited and Unlimited Turbulent Atmosphere

Izv. AN SSSR Ser. geof. (News of the Academy of Sciences USSR Series Geophysics) 1961, No 7, pp 1078-1084

Investigation of a three-dimensional nonstationary task to determine on the basis of movement equations the horizontal velocity components u and v above a mountain for a definite pressure field. Taken into account is the eddy viscosity in vertical as well as in horizontal directions. The coefficients of the eddy viscosity are considered to be definite functions of the coordinates x, y and z. The convective derivates of the velocity are assumed to be equal to zero or to be known functions of the coordinates and of time, wherefore a linear task is investigated. The baric gradient is considered

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to be a definite function of the coordinates and of time. One assumes u and v to be zero on the surface of the mountain $z = h(x, y)$ while the wind is considered to be geotrophic on a certain fixed level $z = H$. Besides that the distribution of u and v is set for the vertical boundaries $x = \pm L_1$, $y = \pm L_2$ and the initial moment $t = 0$. The solution of the task is obtained through an operative transformation of the variable t with subsequent solution of the equations in the images with Galerkin's method and return to the original ones with the aid of a convolution formula. The solution is expressed by multiple sums of multiple integrals. By the transition to $t = \infty$ a stationary solution is obtained, while by the transition to $L_1 = L_2 = H = \infty$ the solution for the semirestricted domain is obtained. Authors confined themselves to computation leading to the general solution restricted to its boundary forms. Besides that, a sketch of the equivelocity contours is shown having no connection with the text, they are in relation to the profile of a mountain characterized by $h = h_o/(1+cx^3)$. (h_o and c are parameters).

L. Gandin

2/2

RZh Mekhanika 3-62 Abst#3C272 Mechanics/Elasticity and Plasticity/ Ground Mechanics

KUO Ming

Determination of the Resistance of Long Piles

Sb. Leningr. in-ta inzh. zh-d transp. (Proceedings of the Leningrad Institute of Railway Transport Engineering) 1958. issue 163, pp 99-127

In order to determine the supporting power of long piles an approximation computation formula is established with the aid of the methods of the theories on elasticity and plasticity.

Referent's comment: Berezantsev and Kuo ming have subsequently improved the proposals of computation (Foundations and Fundaments. Scientific-Technologic Bulletin, 1959, No 22).

V. Sipidin

L_//

RZh Mekhanika 3-62 Abst#3C294 Mechanics/Elasticity and Plasticity/ Ground Mechanics

MIEH An-tin
ZASHCHUK I. V.

Measuring of Tensions in Soils with Ultrasonic Waves

Sb. tr. Khar'kovsk. avtomob-dor. in-t (Annual Volume of the Khar'kov Institute of Automobile Roads) 1961, issue 25, pp 97-103

[No abstract]

L_//

RZh Mekhanika
3-62

Abstr#3C383K Mechanics/Elasticity and Plasticity/Rods and Rod Systems/Girders

HSU Chih-lun

Theory of Elasticity. Textbook for Advanced Educational Institutions

Shanghai, Renmin chiaoyu ch'upanshe 1960 295 thousand characters; 1 yuan 40

[No abstract]

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RZh Mekhanika 4-62

Abst#4B861 Mechanics/Hydromechanics/Movement of Liquids and Gases in Porous Media

LIU Tz'u-ch'iun

Water Afflux in Horizontal Drain Pipes in a Finite Double-Layer Stratum

Izv. AN SSSR Otd. tekhn. i mekhan. i mashinostr. (News of the Division of Technology, Mechanics and Machine Building of the Academy of Sciences USSR) 1961, No 3, pp 193-195

Obtained is the solution of the task bearing on the afflux of groundwater into the horizontal drains in a stratum which is confined on the top by a layer of even potential and below by a waterbearing layer of different water permeability; a horizontal water-repellent layer stretches under the latter. In order to solve the problem the method based on the theorem of the function of a complex variable is used which P. Ya. Polubarinova-Kochina has employed in the investigation of flows caused by point eddies in a multilayer medium (Some Problems of the Plane Movements of Groundwater Publishing House of the AS USSR 1942); by B. K. Rizenkampf (Records of the Saratov University 1940, 15, issue 5); by N. K. Kalinin (Reports of the AS USSR 1941, 30,

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Abst#4B861 (cont'd)

No 7). Author follows this method by substituting point drains for the eddies. In that case the complex velocities are thus expressed:

in the top layer

$$\omega_1 = u_1 - iv_1 = \frac{q}{2\pi k_1}\left(\frac{1}{z+il} - \frac{1}{z-il}\right) + \int_0^\infty [A_1(\alpha)e^{i\alpha z} + B_1(\alpha)e^{-i\alpha z}]\,d\alpha$$

in the bottom layer

$$\omega_2 = u_2 - iv_2 = \int_0^\infty [A_2(\alpha)e^{i\alpha z} + B_2(\alpha)e^{-i\alpha z}]\,d\alpha$$

Here $z = x + iy$ is the complex coordinate of the domain of filtration; q is the intensivity of the flow; il is the ordinate of its location, k_1 is the filtration coefficient of the top layer, $A_1(\alpha)$, $A_2(\alpha)$, $B_1(\alpha)$ and $B_2(\alpha)$ are complex functions of the actual variable α, determined from the limit conditions. Author obtains after adequate transformations the equation of the complex potential in the top layer

$$W(z) = h_1 + i\psi_1 = \int \omega_1(z)\,dz$$

and after having separated from it the actual part - the formulae for

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Abst#4B861 (cont'd)

h_1 and q. Corresponding formulae are obtained also for the particular case when the bottom layer has an infinite depth. A layout of this kind has been investigated previously by the author (News of the AN USSR. Division of Technology and Mechanics and Machine Building, 1960, No 3, pp 157-158, RZh Mekh 1961, 8 B 661)

V. Bochever

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RZh Mekhanika 4-62

Abst#4C376 Mechanics/ Elasticity and Plasticity/ Rods and Rod Systems

WANG Ch'i-cho

Computation of Statistically Undetermined Constructions with the Electric Analogy Method

Tumu gong-cheng xuebao (In the Chinese J. Civil Engineering) 1960, No 3, pp 3-19

The methods of electric modelling are investigated for frames with nonmiscible nodes, cover plates, framework of industrial constructions, computing them from the angle of strength and stability. The analysis and the comparison are given for the different scheme-analogies modelling the bars under deflection. The article is of survey character and comprises a considerable amount of references bearing on the electric modelling of systems composed of bars.

K. Keropyan

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Abst#4C421 Mechanics/Elasticity and Plasticity/ Strength of Constructions

CH'IEN Ling-hsi (in the original CH'ENG Ling-hsi)
T'ANG Hsiu-chin
T'ANG Chun
TS'AO Li-ch'eng (in the original TSAO Li-ch'eng)

Computation of Arched Dams with the "Cantilever Arch" Method Taking into Account Torsional Forces

Scientia sinica 1961, 10, No 4, pp 449-482 (Russian) Cf. Dalian gongxueyuan xuekan 1959, No 6, pp 11-30

[No abstract]

RZh Mekhanika 5-62 Abst#5A65 Mechanics/General Mechanics

LIU Yen-chu

Dynamics of Damper Gyroscopes

Vestn. Mosk. un-ta Matem. mekhan. (News of Moscow University of Mathematical Mechanics) 1961, No 4, pp 48-57 (English summary)

Equations are established of the movement of gimbal suspension gyroscopes moving according to a definite rule. Following is assumed: 1) the rings of the Cardan joint are connected with the body through spring and oil buffers; 2) the axes of rotation of the external and internal rings are neither the central nor the main axes; 3) the axes of the rotor and the two rings are not perpendicular to each other nor do they intersect; 4) the center of mass of the rotor is located on the axis of rotation. In case of several special laws of the movement of the basis, the simplification of the obtained equations is carried through and conclusions on quality are drawn.

1/1 V. Krementulo

RZh Mekhanika 5-62 Abst#5A124 Mechanics/General Mechanics

CHANG Ssu-ying

A Theorem of Optimum Control

Prikl. matem. i mekhan. (Applied Mathematics and Mechanics) 1961, 25, pp 413-419

The task is thus set: to find through Lagrangian common multiples the increase of the optimizing functional

$$S = \sum_{i=1}^{n} c_i x_i (T) \qquad (1)$$

in the task on the optimum control of a system expressed by the equation

$$\dot{x}_i = f_i (x_1, \ldots, x_n; u_1, \ldots, u_r) \quad (i = 1, \ldots, n) \qquad (2)$$

where x_i are the phase coordinates of the system. $u_1, \ldots, u_r$ are the locations of the control operators. Author denominates "Permissible controls" cyclically continuous time functions $u_1(t), \ldots, u_r(t)$ sat-

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Abst#5A124 (cont'd)

isfying the condition at any time

$$g_j(u_1, \ldots, u_r) \leqslant 0 \quad (j = 1, \ldots, m), \tag{3}$$

However the set task is actually solved for a case, when no restrictions are imposed on $u_i (i = 1, \ldots, r)$, as the author in page 415 of the work considers the variations $\delta u_1, \ldots, \delta u_r$ independent. Besides that, what is of great importance, the character of these variations is not specified. A formula bearing on the increase of the functional (1) is established in the article, further also equations which have to be satisfied by the optimum trajectory. It is demonstrated that in the task of optimum control (when $i = 1, \ldots, r$ stands good for $u_i(t)$) limitation (3) is not applied and it can be solved with the classical variation calculus. This result is well known (Pontryagin L. S. Achievements of the Mathematical Sciences. 1959, 14, No 1).

I. Litovchenko

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RZh Mekhanika 5-62

Abst#5B153 Mechanics/Hydromechanics/ Dynamics of Gases and Aerodynamics

WANG Shih-ts'un

Generalization of the Eddy Theory of the Lifting Propeller

Tr. Mosk. aviats. in-ta (Transactions of the Moscow Aircraft Institute) 1961, issue 142, pp 25-80

Formulae are presented for the computation of the three components of the mean inductive velocity at an arbitrary point of the space. An arbitrary angle of incidence is investigated; changes in circulation in relation to the azimuth are examined. Formulae of a form suitable for numerical integration are presented. For particular cases are obtained formulae presented previously in works of other authors.

G. Maykapar

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RZh Mekhanika
5-62
MITKALINNYY V. I.
HE Yu-chin

Abst#5B249 Mechanics/Hydromechanics/Dynamics of Gases and Aerodynamics

Some Aerodynamic Problems on Martin Furnaces of a Capacity of 600-900 t According to the Data of Investigations on Models

Sb. nauch. tr. Zhdanovsk metallurg. in-t (Collection of the Scientific Transactions of the Zhdanov Metallurgic Institute) 1961, issue 7, pp 218-230

The methods and results obtained by experimental investigations are described; they were carried out with burners installed at different angles on an aerodynamic model of the operative area of a Martin furnace. The model was made of organic glass at a scale of 1:50. The picture of the movement of the water in the operative area could be studied visually on the hydraulic model while the distribution of the pressures and the velocities in the different sections of the operative area could be studied on the air model.

Different air input schemes were studied, further several modifications of the cap of the Martin furnace. The picture of the flow

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Abst#5B249 (cont'd)

in the model furnace was determined permitting suggestions regarding the rational shapes of furnaces.

Yu.Dityakin

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RZh Mekhanika 5-62

Abst#5B771 Mechanics/Hydromechanics /Movement of Liquid and Gas Mixtures

SMOLIYKEV A. E.
HUANG Chiang-tseng
KORSHUNOV A. P.

Problems of Hydraulic Conveying of Coal and Rocks

Tr. 1-oy Vses. nauchn-tekhn. konferentsii po gidravl. dobyche uglya (Transactions of the All-Union Scientific-Technological Conference on Hydraulic Production of Coal) Moscow, 1959, pp 592-596

The movement of lumps of coal or rocks of different shape in tubings is investigated. The starting velocity of the grains of the conveyed material and its relative movement velocity compared to the water flow were investigated in ratio of the grain size and tube diameter. The tests were carried out with a cine-speedometer. The characteristics of suction dredges were established at a suction height of 1.5 m and at a suction line length of 15 m. The suction dredge was operated with circulating hydraulic mixture. Examinations of such kind were carried out with sand, gravel, and gravel-sand mixture.

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D. Roshchupkin

RZh Mekhanika 5-62

Abst#5B845 Mechanics/ Movement of Liquids and Gases in Porous Media

LIU Tz'u-ch'jung

The Afflux of the Fluid in a Circular Field of Wells with Uniform Yield in a Circular Heterogeneous Layer

Izv. AN SSSR Otd. tekhn. i mekhan. i mashinostr. (News of the Academy of Sciences USSR, Division of Technology and Mechanics and Machine Building) 1961, No 5, pp 168-170

Expressions of the velocity potentials and of the yields of wells are presented by the methods of the theorems of functions of complex variables; these are wells located in a layer composed of two concentrical zones of different permeability.

G. Tsybul'skiy

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CH'EN Chen-cheng

Collision of Elastico-Plastic Bars of Different Length

Izv.AN SSSR otd.tekhn.i mekh.i mashinostr. (News of the Academy of Sciences USSR, Division of Technology, Mechanics and Machine Building) 1961, No 1, pp 39-45

The longitudinal collision of elastico-plastic bars of different length and identical section is investigated. Given is a diagram for the material of the bars having a linear sector; the lengthwise distribution of the tensions, deformations and velocities in case of considerable plastic deformations are determined by the distribution curve for the time of the clash and also the time when the contact of the bars has ceased. A clash of such velocity is investigated which causes plastic waves of strong discontinuity, but it is assumed that after repulsion from the free ends in case of an interaction with the Riemann waves the tension waves do not cease to be relieving waves

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and that after the passing of the relieving wave the tensions in the bar do not exceed new elastic limits. Four references.

B. Malyshev

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RZh Mekhanika 5-62 Abst#5C402 Mechanics/Elasticity and Plasticity

LIU Huei-hsiach

Computation of Seismic Loading of Civil and Industrial Buildings

Jianzhu xuebao 1961, No 8, pp 20-26

[No abstract]

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RZh Mekhanika 5-62 Abst#5C400 Mechanics/Elasticity and Plasticity

WANG Chin-po

The Influence of the Modulus of Elasticity of the Railway Bed on the Tensions Arising on the Surface of the Webs of Rail.

Sb. Materialov VII Nauchno-tekhn. konferentsii po voprosu putevogo kh-va (Subjects of the 7-th Scientifico-Technological Conference on Questions of Traffic) Leningrad, 1961 pp 34-35

[No abstract]

L 1/1

CHAO Tsu-wu

Limit Equilibrium of Reinforced Concrete Plates

Tr. Tsentr. n-i in-ta stroit. konstruktsiy Akad. Stroit-va i arkhitekt. SSSR (Transactions of the Central Institute of Building Constructions, Academy of Construction and Architecture, USSR) 1961, issue 4, pp 226-236

Based on the yielding point of the reinforced concrete plate expressed by $M_1 = \pm m_T$, $M_2 = \pm m_T$ (where M_1, M_2 are the main moments) and making use of the results obtained by Halasz (Izv AN SSSR Section of Technological Sciences 1956, No 8, pp 42-54 - RZh Mekhanika, 1957, No 10, 12131) author determines by the energy method the loading capacity of hinged independent plates loaded with uniform pressure, under the condition that the plate when destructed gives rise to a convex surface. Formulae and numerical results are presented for elliptical, square and rectangular plates. The case is also investigated bearing on the

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load by a concentrated force; the results obtained for that are tallying with the determinations of AR Rzhanitsin (Computation of reinforcements taking into consideration the plastic properties of the materials. State Publishing House for Construction and Architecture. - 1954, 288 pages. - RZh Mekh. 1957, No 8, 9428 K.)

V. Rozenblyum

2/2

RZh Mekhanika 5-62 | Abst#5C426 | Mechanics/Elasticity and Plasticity

TS'AI Shao-huai

Computation of the Stability of Circular Reinforced Concrete Plates by the Limit Equilibrium Method. 1, 2.

Jianzhu xuebao 1961, No 9, pp 21-24; No 10, pp 28-31, No 11, pp 30-33

[No abstract]

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RZh Mekhanika 5-62 | Abst5C456 | Mechanics/Elasticity and Plasticity

CH'E Shih-yuan

Advice for Determining the Cracking Stability of Prestressed Elements

Yianzhu xuebao 1961, No 10, pp 32-31 [sic].

[No abstract]

1/1

RZh Mekhanika 6-62 Abst#6A150 Mechanics/ General Mechanics Theory of Mechanisms and Machines

CHEKANG Ta'u-hsien

Kinematic Analysis of Fourlinked Mechanisms with Spheric Pairs by the Matrix Method

Izv. vyssh. uchebn. zavedeniy. Mashinostroyeniye. (News of the Schools Higher Education. Machine Building) 1961, No 1, pp 39-53

The tasks of determining the positions of spatial fourlinked mechanisms are solved by matrices of transform of the Cartesian coordinates. Advices are given how to chose the system of coordinates connected with the separate links.

S. G. Kislitsyn

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RZh Mekhanika 6-62 Abst#6B153 Mechanics/Hydromechanics/Dynamics of Gases and Aerodynamics

WANG Shi-ts'un

Aerodynamic Characteristics of the Lifting Propeller of the Helicopter Taking into Account the Circulation Change Due to the Azimuth

Izv. vyssh. uchebn. zavedeniy. Aviats tekhn (News of the School of Higher Education. Aircraft Technology) 1961, No 2, pp 26-34

Formulae are presented for the computation of the traction and efficiency coefficients. The circulation is approximately given by a series

$$\Gamma(\bar{r}, \psi) = \Gamma_0(\bar{r})[1 + A_1\bar{r}\cos\psi + B_1\bar{r}\sin\psi + \ldots]$$

The mean circulation in reference to the azimuth is $\Gamma_0(\bar{r}) = A\bar{r}^{m_0}(1-\bar{r}^{n_0})$

An example of the computation is given; its results are compared with the computed figures for a propeller of the same kind without taking into account the change of circulation due to the azimuth.

V. E. Khaterskiy

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RZh Mekhanika 6-62

Abst#6B670 Mechanics/Hydromechanics/Dynamic Meteorology

DYUBYUK A. F.
HSU Hsuao-chin

The Ritz-Galerkin Method for Solving the Task of an Air Flow Around a Mountain at a Definite Pressure Field in the Turbulent Atmosphere

Vestn.Mosk.un-ta Fiz. astron. (News of the Moscow University. Physics. Astronomy) 1961, No 4, pp 59-67

The problem is investigated on an air flowing around a mountain of the arbitrary definite profile $z = h(x, y)$. Account is taken of the unsteadiness, the eddy viscosity, the Coriolis force and the force of the baric gradient which is conjectured to be a definite function of the coordinates and of time. The coefficients of the eddy viscosity v_1 in the vertical and v_2 in the horizontal sense are considered to be definite constants. A linear task is investigated disregarding the convective derivative velocity. It is demonstrated that one can solve the nonlinear tasks with subsequent approximations, substituting in order to determine the following approximation the convective de-

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Abst#6B670 (cont'd)

rivatives computed for each preceding approximation in the right part of the equations.

Operative transformation by the time t is used for the solution of the task. The equations for transformation are solved by the Ritz-Galerkin approximation method. The products of trigonometric functions are used as basic functions, they return to zero on the level h, on the upper boundary of the area perturbated by the mountain $z = H$ and on the vertical boundaries of this area $x = \pm L_1$ and $y = \pm L_2$. The values H, L_1 and L_2 are considered as given constants. Detailed computations are presented in the article, further the general solution of the task is deduced. The stationary solution obtained from the general solution by the limit transition at $t \to \infty$ is likewise deducted.

Actual computations are shown for a two-dimensional task with the additional assumptions, that the components of the baric gradient are constant, $v_1 = v_2$ and $h = h(x) = a/(1+c^2x^2)$, where a and c are parameters whose conjectured values are not shown. The results of the computations are submitted to a qualitative analysis. Graphs are shown representing the equal-velocity lines above the mountain.

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Abst#6B670 (cont'd)

The article contains misprints. Seven references.

L. S. Gandin

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RZh Mekhanika 6-62 Abst#6C446 Mechanics/Elasticity and Plasticity

CHANG Che-wen

Bending Oscillations of a Revolving Rotor on an Elastic-Damping Support

Tr. Mosk. aviats. in-ta (Transactions of the Moscow Aviation Institute) 1961, issue 136, pp 57-92

The amplitudes of constrained bending oscillations of a rotary shaft on two supports are determined by taking into account the yielding of the support and the hydroscopic moments of the disks in the presence of an active damper with viscous friction. A system of two integral equations is established referring to the projections of the rotary shaft on the mobile coordinates. The solution of the integral equation system is carried out by iteration. The shown numeric examples of determination of the amplitude of the constraint oscillations in the subresonance and resonance operative ranges verify that the iteration process coincides soon enough: already the second approximation gives satisfying accuracy.

B. M. Vysochin

2539
CSO 3550-N

RZh Mekhanika 7-62 Abst#7A50 Mechanics/General Mechanics

SHIH Yen-fu
ROMANKOV P. G.

On the Number of Noncalibrated Complexes and Simplexes Obtained by the Dimension Analysis Method

Inzh-fiz zh (Engineer Physicist Journal) 1961. 4, No 12, pp 102-105 (English summary)

[No abstract]

1/1

RZh Mekhanika 7-62 Abst#7B356 Mechanics/Elasticity and Plasticity

CH'IEN I-liang

Static Computation of a Cable Suspension Roof Strengthened with Double Cables by Taking into Account Prestress

Jianzhu xuebao 1961, No 9, pp 25-31

[No abstract]

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CH'EN Huei-ch'uan

Pressure Distribution in the Outlet Part of a Water Conduit

Scientia Sinica 1961, 10, No 2, pp 237-266

The research was devoted to the investigation of the pressure distribution in the outlet part of a waterconduit of constant cross section at free discharge of the fluid. The author understands under outlet part the extreme sector of the conduit on which the pressure distribution is different from the hydrostatic pressure. The experimental tests were carried out on conduits of 7.5 to 15 cm diameter with different roughness of the walls. The pressure distribution in the cross section of the outlet and along the end sector, the influence of warming up and of the boundary conditions in the outlet (the duct's cross section below the outlet, the angle of widening the side walls, the gradient of the bottom etc.) were investigated in detail on the piezometric line. The theoretical examination of the problem was carried out for a circular pipe at free discharge of the flow. The pressure

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distribution in the cross section of the pipe was searched for by the aid of Euler's equation, the continuity and the experimental function establishing the relation of the variance of the pressure and of the hydrostatic pressure to the kinetic compression in the point. Making use of the force function and several empirical relations author locates the position of the piezometric line along the outlet part for the top and bottom points of the pipe. The computation and the test tally well. Advices are given for the reduction of the negative pressures in the upper part of the water pipe. G. P. Skrebkov

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RZh Mekhanika 7-62 Abst#7B716 Mechanics/Dynamic Meteorology

YEH Tu-cheng
CHU Pao-chen

Several Questions of Great Importance on the General Circulation of the Atmosphere

Translated from Chinese, Leningrad, Gidrometeoizdat 1961, pp 240, 111 maps 1 ruble 30 kopecks.

[No abstract]

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RZh Mekhanika 7-62 Abst#7C231 Mechanics/Elasticity and Plasticity

TSENG Sheng-k'uei
CHU Ch'ien-fang

Comparison of Some Formulae on the Computation of the Supporting Power of a Single Pile

Jianzhu xuebao 1961, No 2. pp 31-33, 30.

[No abstract]

1/1

RZh Mekhanika 7-62 Abst#7B242 Mechanics/Hydromechanics

STECHKIN B. S.
DUBINSKIY M. G.
SOKOLOV K. K.
TS'AO Hsiao-ching

On the Radial Equilibrium of the Flow

Izv AN SSSR Otd tekhn n (News of the Academy of Technical Sciences USSR. Department of Technical Sciences) 1961, No 4, pp 11-15

Authors wrote the essay to refute the well known conclusion of the theorem of the axial turbines which denies the possibility of investigating the axially symmetrical eddy flow behind the guide vanes. The results shown imply the measurements of the flow angles on the discharge edges of the twisted blades in the straight guide vanes. G. Yu. Stepanov

1/1

RZh Mekhanika 7-62 Abst#7C512 Mechanics/Strength of Materials

LI Kuang-tsung

Experimental Investigation of the Creep of Old Age Concrete

Izv Vses n-i in-ta gidrotekhn (News of the All-Union Scientific Institute of Hydrotechnology) 1960, 66, pp 211-226

The results of the experimental check-up on some physical prerequisites of the creep theorem of concrete are shown. The investigations were carried out on air stored concrete test pieces of 5x5x20 cm. The specimens were tested for axial compression with varying loads, (the stress changed stepwise from $\sigma = 0.14 - 0.23\ R_{lim}$ to $\sigma = 0.70 - 0.90\ R_{lim}$, the working duration of each step of stress was one hour, one d and seven days), for axial compression with continuous constant load and with lasting deformation i. e., for relaxation. The principle of the application of the creep deformation is fulfilled with stepwise load. The linear function between the creep deformations and the stresses is valid up to a certain value of the stress

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which increases with the rise of the load duration. The curves of the creep deformations for different stresses are alike in case of stresses not exceeding 0.8 to 0.85 R_{lim}. The curves of the creep deformations are alike at different loading durations up to dying out more exactly in the initial period after the application of the load. S. Z. Vul'fson

CHANG Jen-wei

Setup of Relay Systems by the Minimum of Integral Square Deviations

Avtomatika i telemekhanika (Automation and Telemechanics) 1961, 22, No 12, pp 1601-1607 (English summary)

A Lyapunov function is set up for a control system expressed by the differential function

$$\dot{x} = Ax \qquad (1)$$

where A is a constant matrix. Its derivative is in compliance with (1) to the set square form

$$v = -\sum_{i=1}^{n} a_i x_i^2$$

Further, author investigates the system

$$\dot{x} = Ax + cu \qquad (2)$$

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where c is a vector, u is a scalar function which fits u thus, that the decreasing velocity of the function w be at the maximum in every given moment. Later on author affirms that the equation he has found secures along the trajectory the minimum of the integral

$$I = -\int_0^\infty v\,dt$$

Reviewer's comment: The above-said affirmation of the author is erroneous. In the course of demonstration the author makes use of the solution of the system (19); this system is however incompatible with $n > 1$. -- Ye. A. Barbashin.

2/2

RZh Mekhanika 9-62 Abst#9A182 Mechanics/General Mechanics

K'AN Tun-ying

Dynamic Investigation of an Electrically Operated Power System

Avtoref diss kand tekhn In-t mashinoved gos kom-ta (Author's Abstract of his Candidate of Technical Sciences Dissertation. Institute of the Science of Machines of the State Committee of the Soviet Ministry USSR for Automation and Mechanization) Moscow, 1962

[No abstract]

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RZh Mekhanika 9-62 Abst#9B756 Mechanics/Movements of Liquids and Gases in Porous Media

LI Y[illegible]-shang
SHCHERBAKOV G. V.

On the Determination of a Layer's Parameters by a Testing Sampler Relying on the Data of Investigation of the Well's Inflow

Nauchno-tekhn sb po dobyche nefti (Collection of Scientific Technological Papers on Oil Production) All-Union Scientific Petroleum-Gas Institute 1961, No 15, pp 77-79

As far as the discharge of a certain quantity of fluid in the testing apparatus occurs after a short lapse of time the authors intend to make use of the pressure changes in the layer which arise with this process to determine an instantaneous spring. Working up the checked pressures in coordinates $\ln(t\Delta p)$ and $1/t$ the basic hydrodynamic parameters of the layer can be established. A numeric example is quoted showing that the devices may fix the arising depressions. There are misprints in the article. G. P. Tsybul'skiy

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RZh Mekhanika 9-62 | Abst#9C152 | Mechanics/Elasticity and Plasticity

CH'ENG Ch'ing-tung
CHUNG Cho-jan

Vibrations of Slanting Shells under the Effect of Dynamic Load

Jianzhu xuebao 1961, No 2, pp. 27-30.

[No abstract]

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RZh Mekhanika 9-62 | Abst#9C188 | Mechanics/Plasticity Creep, Soil Mechanics

LIU Ch'uan-sheng

A Method of Computing the Effect of Earthquakes on Manystoried Framework Buildings

Jianzhu xuebao 1961, No 3, pp 35-37

Author proposes the basis for the method of appraisal of the seismic spectrum suggested by S. V. Medvedev (Establishing of Earthquakes. Bulletin of the Council for Seismology of the Academy of Sciences USSR, 1957, 6) taking into account the standards of computation of structures in seismic regions(SN-8-57). Author quotes this reference book and proposes the modification of the method of computing only in the part where this method needs the determination of the basic period of vibration of the structure. By that -- as it is usual in the literature dealing with the investigation of the seismic activity on structures -- a composite elastic model of the structures (masses with elastic joints) has been used. The searching

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Abst#9C188 (cont'd)

of the first frequencies (periods) of the vibrations is a wieldy task for the sufficiently intricate systems of the author with examples of four-, fivestoried buildings (i. e., one section comprises 4 to 5 centers of mass). Author proposes to employ in this case S. A. Bernshteyn's bilateral appraisal for the radicals of the characteristic determinant. Two numerical examples are investigated. Ye. I. Shemyakin

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RZh Mekhanika 9-62

Abst#9C262 Mechanics/Plasticity, Creep, Soil Mechanics

TING Chun-hsi

Graphic Computation of the Maximum Thrust and Plane of the Caving in of the Soil for Bulkheads

Jiangshu xuebao 1961, No 2, 38

[No abstract]

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RZh Mekhanika 10-62 Abst#10A143 Mechanics/Theory of Mechanisms and Machines

CHANG Iz'u-hsien

Kinematic Analysis of Devices with Lowest Pairs by the Matrix Method

Izv vyssh uchebn zavedeniy. Mashinostroyeniye (News of Higher Educational Institutions. Machine Building) 1961, No 2, pp 14-30

The synoptic survey of a certain method of determining the disposition of devices by transformation to cartesian coordinates with the aid of matrices is here given. Recommendations on the advisable choice of the coordinate systems connected with the separate links of the device are quoted. The problem of the determination of the dispositions and angular velocities of four-link spatial devices without ball and socket joints is investigated. The general considerations are elucidated by examples of Bennet-Verkhovskiy devices. a spherical device with rotary pairs and a plane hinged four-link joint. S. G. Kislitsyn

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RZh Mekhanika 10-62 Abst#10B594 Mechanics/Hydromechanics

YANG Wen-chieh

Dynamic Characteristics and Resonance of Heat Exchangers of One Material and Operating on One Fluid I. Zero Relative Heat Capacity of the Walls

Nikhon kikay gakkay rombunsyu. Trans Japan Soc Mech Engrs 1961, 27, No 180. 1276-1283, Discuss 1284-1285 (Japanese, English summary)

Theoretical investigation of the dynamic characteristics of the fluid and the temperature of the walls of the heat exchanger consisting of one material and operating on one fluid at zero relative heat capacity between the fluid and the walls. The issues of the investigations demonstrate that the distribution of the periodical thermal load produces resonance oscillations of the relative value and phase displacement of the temperatures of the fluid and the walls. These resonance phenomena are explained by the changes of the enthalpy of the particles of the fluid flowing through the heat exchanger. Summary.

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RZh Mekhanika Abst#10B683 Mechanics/Hydromechanics
10-62

GUSEV V. D.
LI Chun

Dependence of the Measured Parameters of a Heterogeneous Ionosphere on its Perturbation

Vestn Mosk un-ta fiz astr (Herald of the Moscow University. Physical Astronomy) 1962, No 2, pp 46-50

[No abstract]

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RZh Mekhanika Abst#10B803 Mechanics/Hydromechanics
10-62

LANG Chang-hsing

Method to Compute the Gas Inflow in a Range of Wells

Izv vyssh uchebn zavedeniy Neft' i gas (News of Higher Educational Institutions Petroleum and Gas) 1962, No 2, pp 53-58

The approximation solution is given bearing on the task of the first phase of the gas inflow in a range of wells of constant yield in a closed circular layer homogeneous with regard to all parameters. By introducing in the examination the weighted mean pressure on the line along which the wells are located, author substituted the actual flow with a symmetrical radial one. Following expression has been used for the pressure function

$$P^2 = [illegible] + M(t)\frac{r'}{R} + N(t)\ln\frac{r'}{T}$$

where the coefficients L(t), M(t) and N(t) are determined by the border

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Abst#10B803 (cont'd)

conditions, and the radius of the influence l(t) by integral relations analogous to those employed previously by A. M. Priverdyan and E. S. Babich (Translations of the Azerbaydzhan Sc.Res.Inst. for Petrol. production 1953, No 7) G. P. Tsybul'skiy

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RZh Mekhanika Abst#10B804 Mechanics/Hydromechanics

LANG Chang-hsing

Computation of the Exhaustion of a Gas Layer Drained by a Range of Wells

Izv vyssh uchebn zavedeniy. Neft' i gas (News of Higher Educational Institutions. Petroleum and Gas) 1962, No 3, pp 43-48

The approximation computation method is given for the second phase of the gas inflow in a range of wells of constant yield in a closed circular layer of uniform thickness and permeability. As in the preceding article dealing with the investigation of the first phase (cf ref 10B803) author uses here too the concept of the weighted mean pressure on the line along which the wells are located and substitutes an axially symmetric flow for the actual flow. The expressions for the external and internal pressure functions in the areas in relation to the diagram of the range of wells are taken from the same article. The pressure values in the center and on the border of the layer entering in these formulae are determined by certain integral relations. G. P. Tsybul'skiy

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RZh Mekhanika
11-62

Abst#11A131 Mechanics/General Mechanics

CHANG Jen-wei

Synthesis of an Optimum Controller in Systems with Retardation

Avtomatika i telemekhanika (Automation and Telemechanics) 1962, 23, No 2, pp 133-137 (English summary)

Under investigation is a control system whose perturbated motion is expressed by a system of equations with retardation argument

$$\dot{x}_i(t) = \sum_{j=1}^{n} a_{ij} x_j(t) + \sum_{j=1}^{n} b_{ij} x_j(t-\tau) + b_i u \qquad (1)$$
$$(i = 1, 2, \ldots, n), \; x_i(t) = \varphi_i(t), \; -\tau < t < 0$$

where a_{ij}, b_{ij}, b_i and τ are constants, $\tau > 0$

One has to find among the permissible equations $u(x_1, \ldots, x_n)$ securing the asymptotic stability of the solutions of the system (1), the minimizing functional

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Abst#11A131 (cont'd)

$$J = \int_0^\infty \left[\sum_{i=1}^{n} a_i x_i^2(t) + cu^2(t) \right] dt$$

In the assumption that τ is small, the graphs of the initial functions $\varphi_i(t)$ $(i = 1, 2, \ldots, n)$, and $\tau \leq t \leq 0$ determining the solution of system (1) are substituted by direct ones; it is sufficient for their solution to supply at two points the values x_i, for example $x_i(0)$ and $x_i(-\ )$.

Meanwhile the functional J remains with fixed u a function of the arguments $x_i(0)$ and $x_i(-\tau)$, one can use for the solution of the set task the well known method of dynamic programming. The use of this idea is illustrated with an example of a certain equation of the first degree.— L. E. El'sgol'ts

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RZh Mekhanika 11-62 Abst#11B28 Mechanics/Magnetohydraulics

BECK I. V.
TAU Yi-toong

Effects with a Laminar Flame Expansion

Vopr. raketn. tekhn. (Problems of the Rocket Technology) Sb. perev. u obz. in. period. lit. 1962, No 6, pp 13-16. Translated J Aero/Space Sci 1961, 28, No 11, pp 908-909
Also see RZh Mekhanika 1962, 6B18

[No abstract]

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RZh Mekhanika 11-62 Abst#11B103K Mechanics/Gas Dynamics and Aerodynamics

PAI Shih-i

Introduction into the Theory of Compressible Liquids

Translated from English. Moscow. Publishing House for Foreign Literature 1961 (1962), pp 410, ill. 1 ruble 83 kopecks.

[No abstract]

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SHIH Yen-fu
ROMANKOV P. G.
RASHKOVSKAYA N. B.

Investigations of the Drying Process in a Boiling Layer

Zh. Prikl. khimii (Journal of Applied Chemistry) 1962, 35, No 3, pp 530-536

Authors obtain, by analyzing the equations of heat exchange and hydrodynamics, the parameters of similarity of the drying process in a boiling layer for periods of constant and decreasing velocity. The tests were carried out in periodically working drying kilns of 100, 150 and 200 mm diameters with activated silica gel, alumosilica gel coal, further with calcined clay. Based on the tests noncalibrated equations were obtained for the heat emission coefficient in the first period of drying, for the drying time in the second period, and also a single noncalibrated equation for the determination of the aggregate

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drying time in a boiling layer.

The comparison of the heat emission coefficients obtained by the authors in the first period with the data of other researchers agrees in a satisfactory way when processed according to the equation

$$N = 0.25R\left(\frac{d}{h}\right)$$

where N and R are the Nusselt's and Reynold's numbers, h is the thickness of the layer, and d is the diameter of the grains. A. P. Baskakov

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RZh Mekhanika 11-62 Abst#11B573 Mechanics/Hydromechanics

YANG Fen-chieh

The Distribution of Temperature in a Heat Exchanger with Plastic Ribs

Nixon kikay gakkay ponbunsyu. Trans. Japan. Soc. Mech. Engrs 1961, No 177, pp 730-734 Discuss 734-735 (Japan, English summary)

The method is quoted for determining the temperature of liquid and metal in a heat exchanger with plastic ribs. The method has a general character and might be applied to any configurations operating with any fluid passing around. The method is illustrated with its use in a recovery unit with transverse flow and in a Z-shaped recovery unit for small gasturbines. The conclusion is drawn that the Z-shaped type is more massive and suffers the least from thermal stresses.

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RZh Mekhanika 11-62 Abst#11B592 Mechanics/Hydromechanics

KUANG Wei-yen

Investigation of the Jump of Temperature on the Boundary between the Solid Body and the Helium Flowing Over it

Zh. eksperim. i teor. fiz. (Journal of Experimental and Theoretical Physics) 1962, 42, No 4, pp 921-935 (English summary)

[No abstract]

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RZh Mekhanika 11-62 Abst#11B770 Mechanics/Hydromechanics

LANG Chang-hsin

Approximation Solution of the Task of the Nonstationary Leakage of the Gas towards the Range of Wells in a Circular Layer of Varying Thickness

Izv. vyssh. uchebn. zavedeniy Neft' i gaz. (News of the Higher Educational Institutions. Petroleum and Gas) 1962, No 5, pp 63-68

The problem of the movement of the gas in a closed dome shaped layer of a radius R to the sole and a maximum height h in the center n wells with uniform frontal pressure p_c, are located at a distance R_1 from the center. The law is determined bearing on the change of the integral yield G, the pressures on the boundary and in the center of the layer as function of time. The problem is reduced to the solution of a nonlinear equation of the heat conductivity, meanwhile the second phase of the continual gas filtration is investigated. By assuming that the exploited range of wells divides the layer in

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two parts, auther searches the solution in both parts by the steps r in the form of polynominals, which have coefficients depending on time; that is in accordance with the method of the moment integral relations proposed by G. I. Barenblatt. The obtained differential equations offer the facility to determine numerically the searched values. An example is quoted for a computation with concrete initial figures. - M. V. Filinov

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RZh Mekhanika 11-62 Abst#11C87 Mechanics/Elasticity Theory

TUNG Shih-ling

Computation and Application of Some Types of Slanting Shells

Jianzhu xuebao 1961. No 5, pp 22-26 32; No 6, pp 20-22

[No abstract]

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RZh Mekhanika 11-62 Abst#11C93 Mechanics/Elasticity and Plasticity

HSU Yung-chi
LIU Chia-jung

Workable Method to Compute New Type of Shell Constructions 4.5.6 Part

Jianzhu xuebao 1961. No 1. pp 27-31; No 2. pp 34-37; No 3. pp 28-34 38

[No abstract]

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RZh Mekhanika 11-62 Abst#11C322 Mechanics/Plasticity, Creep, Soil Mechanics

WANG Ching-fei
MITOV A. I.

Experimental Investigation of the Supporting Power of Piles Loaded by Securing

Tr. Leningr. in-ta. vodn. transp. (Transactions of the Leningrad Institute for Water Transport) 1962, No 27, pp 17-23

[No abstract]

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RZh Mekhanika 11-62 Abst#11C450 Mechanics/Stability of Constructions

YU Tsai-[illegible]

Static Computation for Symmetric Load of a Circular Suspension Covering with Double Cables

Jianzhu xuebao 1961, No 4, pp 27-30, 20

[No abstract]

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LIU Shen-ts'uan

Computation of the Laminar Boundary Layer in a Noncompressible Liquid in the Presence of Suction and Indraft

Zh. vychisl. matem. i matem. fiz. (Journal of Calculation, Mathematics and Mathematical Physics) 1962, 2, No 4, pp 666-683

The first part is consecrated to the computation of the laminar boundary layer in a noncompressible liquid in the presence of suction and indraft by the generalized method of integral functions. The idea of this method lies in the following: The differential equation of the movement's quantity for the boundary layer increases to an arbitrary function f(u) (the function f(u) after having been twice differentiated is rapidly enough striving to zero, when the velocity u approaches the velocity u_∞ on the limit of the boundary layer) and the equation of continuity increases to the function f'(u). Afterwards both equations are summed up and the result obtained is integrated across the

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boundary layer, and one obtains as result an integral equation. The functions searched for in this equation φ and φ^{-1} (with accuracy up to the constant common multiple $\varphi = [\partial u/\partial y]^{-1}$) are approximated through the values of these functions by interpolated polynomials of N-1th degree at some N intermediate points. After having substituted in the integral equation these polynomials, for the function f(u) the functions of the form $f(u) = (1 - u)^n$, where $n = 1, 2, \ldots, N$, -- in order to determine N values of the function φ in the intermediate points author obtained N regular differential equations. The article quotes expressions for the interpolated polynomials and the differential equations up to the fourth approximation. The computation of a boundary layer is shown for the case, when

$$u_\infty = \operatorname{sh}\frac{\alpha x}{l}\operatorname{sech}^2\frac{\alpha x}{l}.$$

The computed results are presented by tables and graphs.

The second part of the work is consecrated to the solution of the same task but without indraft and suction. Formulae are quoted

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Abst#12B428 (cont'd)

in order to compute the boundary layer with the method of finite differences. So far as this method is not suitable in the vicinity of the basis of the boundary layer, an approximation solution has been found for this area by the method of series development. It became obvious that the results of the difference computation method tallied very well with the results obtained by the integral relation method.
V. M. Kuptsov

L3/3

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RZh Mekhanika 12-62 Abst#12B608 Mechanics/Hydromechanics

CHOU Hsiao-p'ing

The Problem of the Formation of Cumuli

Izv. AN SSSR Ser. geofiz. (News of the Academy of Sciences USSR. Series of Geophysics) 1962, No 4. pp 548-557

The issue is studied of the initial stage of the development of an axially symmetrical cloud which arises in the process of solving the atmosphere's wet instability. Three equations of the movement serve as initial equations, - the equation along the vertical is valid in its full form, as the local cloud formation is substantially connected with the instability of the movement; the equation of the heat inflow and the equation of the continuity. The "adhesion" to the earth and the fading of the process by altitude are considered to be the boundary conditions. In the initial moment no movement is present, the temperature deviation from the static distribution $\vartheta(x, y, z)$ is considered as given. The coefficients of the turbu-

L1/3

Abst#12B608 (cont'd)

lence friction and temperature mixings are considered constant and uniform (50 m^2/sec). The derivatives by t are substituted by differences, the steps in time are considered to be 20 sec. One obtains equations of the form $(\Delta - a^2)u = f$, for the three velocities and v and Poisson's equation for π (deviation of the pressure from the static pressure reduced to the standard pressure at sea level). The right side contains nonlinear terms and the initial fields. hereto transposed all the functions with the exception of the basic one, i. e., the function standing in the given equation under the symbol of Helmholtz's operator. The derivatives in f are also computed with the difference method, the step $\delta z = \delta r = 100$ m. Green's functions are calculated previously, so that the task comes to the solution of a system of algebraic equations, while the integration by $0 \leqslant z \leqslant 2$ km, $0 \leqslant r \leqslant 2$ km is substituted for the squaring of the half-space. The solution is carried out by the iteration method; one takes as first approximation the value of the function at the end of the previous step. A concrete example has been computed by the Computer BESM-2, in which the function w was thus given, that the atmosphere is unstable in the layer 450 M $< z <$ 650 m. Graphs are quoted for the

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Abst#12B608 (cont'd)

velocity distribution and w in time. The results are discussed and it is especially pointed out that after a single wave of the vertical velocity and w have passed the movement trends to settle at the given point. V. M. Kalyshnikov

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RZh Mekhanika 12-62 Abst#12C89 Mechanics/Elasticity Theory

YUAN Hsiao-ch'u
CH'EN Pao-yuan
LIU K'ai-kuo
CHUNG Mu-t'ang

Some Theories for Computing Nonreinforced Slanting Shells with Rectangular Base

Jianzhu xuebao 1962, No 1, pp 18-25

[No abstract]

1/1

RZh Mekhanika 12-62 Abst#12C102 Mechanics/Elasticity Theory

CHANG Wei-yu
CHEN Chao-t'ing
CHEN Chia-feng

Quick Method for Computing Front Arches at Slanting Twofold Curvature Shells

Jianzhu xuebao 1961, No 12, pp 15-23

[No abstract]

1/1

RZh Mekhanika 12-62 Abst#12C254 Mechanics/Elasticity and Plasticity

TZ'U Shio-p'ing

Creep of a Beam of Great Curvature at Plane Bend

V sb. Raschety na prochnost' (In the Collection Strength Calculations) No 8, Moscow Mashgiz 1962. pp 212-224

It is assumed that at settled creep the relation of the stress and the deformation is expressed by a step-function. The regular kinematic hypotheses of the elasticity theory on the bend of bars with great curvature are used and the constants contained in them are determined (the change of the curvature k and the radius of the neutral layer r) by two conditions of static equivalence. It is proposed to set up the solution of the resulting equations for k, r by subsequent approximations with the octogonal focus method of A. A. Popov. Detailed computations are quoted for a square cross section. The possibility is mentioned to expand the solution to non-settled creep on the basis of the equations of the creep theory (aging) suggested by Yu. N. Rabotnov.
[illegible] I. Rozenblyum
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RZh Mekhanika 12-62 Abst#12C261 Mechanics/Plasticity, Creep, Soil Mechanics

CHU Po-fang

Redistribution of the Stresses in Non-Homogeneous Constructions as Effect of the Creep

Jianzhu xuebao 1961, No 1, pp 14-18

On the basis of Maslov-Apytyunyan's creep theory statically indeterminate constructions are investigated, whose materials have different modulus of elasticity and degree of creep. A case of old concrete is investigated (the degree of creep does not depend on age) and an exponential function is taken as core of the creep. By making use of the conditions of joint deformations one obtains a system of integral equations of the second Volterra type concerning unknown stresses. These stresses are searched for as finite total of a series of exponential time functions. In the final analysis the problem comes to a system of algebraic equations, whose amount tallies with the amount of the unknown stresses. As conclusion a series of simple examples is quoted as illustration. M. A. Zadoyan
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RZh Mekhanika 12-62 Abst#12C293 Mechanics/Elasticity and Plasticity

HSIEH Ting-i

Stability of Sand Slopes Exposed to Vibrating Movements

Sb. nauchn tr. Leningr. inzh.-stroit. inst. (Collection of the Scientific Transactions of the Leningrad Institute of Construction Engineers) 1962, No 37, pp 95-105

An experimental-theoretical investigation of the influence of the parameters of vibrating movements on the dynamic stability of slopes. G. A. Geniev

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RZh Mekhanika 12-62 Abst#12C309 Mechanics/Elasticity and Plasticity

YERSHOV V. A.
HSIEH Ting-i

Slip Resistance of Water Saturated Sands as Function of the Acceleration of Vibrations

"Osnovaniya, fundamenty, mekhan. gruntov. Dokl. 20 Nauchn. konferentsii Leningr. inzh. stroit. in-ta" (Foundations, Fundaments, Soil Mechanics. Report of the 20th Scientific Conference of the Leningrad Institute of Construction Engineers) Leningrad, 1962, pp 20-23

The results are quoted of the measurements of the slip resistance of water saturated sand which has been submitted to harmonic vibrations. The tests prove that the function of the slip resistance τ_a at an acceleration $\alpha > \alpha_0$ is expressed by the formula

$$\tau_a = \tau_0 \exp[-k(\alpha - \alpha_0)]$$

where τ_0 is the slip resistance under static conditions; α_0 is the value of acceleration where $\tau = \tau_0$; k is a constant not depending on the den-

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Abst#12C309 (cont'd)

sity of the sand and on the load. The acceleration α_0 illustrated by a graph is a function of the latters. K = 0.003 - 0.0025 sec^2/sm for the tested sand. V. N. Nikolayevskiy

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RZh Mekhanika 12-62 Abst#12C494 Mechanics/Stability of Constructions

SUNG Lian-hung

Determination of the Crack Resistance of Prestressed Reinforced Elements of Rectangular Section

Jianzhu xuebao 1961, No 12 pp 31-33

[No abstract]

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RZh Mekhanika
12-62

Abst#12C475 Mechanics/Stability of Constructions

FAN Wen-t'ien

Simplest Method of Computing the Aggregate Semicircular Jacketing of a Railway Tunnel

Jianzhu xuebao 1962, No 1, pp 26-27

[No abstract]

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